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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/256,346	02/24/1999	KEN-ICHI TAKATORI	Q053397	9700

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EXAMINER

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ART UNIT PAPER NUMBER

2675

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Please find below and/or attached an Office communication concerning this application or proceeding.

9x3

Office Action Summary	Application No. 09/256,346	Applicant(s) TAKATORI ET AL.	
	Examiner Alecia D. Nelson	Art Unit 2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-19 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-15 is/are rejected.
- 7) ☒ Claim(s) 5,6,8/5/3/2/4,9/6/5/3/2/1 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. **Claim 14** is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only, See MPEP § 608.01(n). Appropriate correction is required. The claim will be rejected on the merits as best understood by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. **Claims 1-4, 8/1, 8/2/1, 8/3/2/1, and 8/4/3/2/1** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mihara (JP Patent No. 405303076) in view of Okada et al. (U.S. Patent No. 4,800,382).

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With reference to **claim 1**, Mihara teaches a method for driving a liquid crystal display device comprising scanning successively a plurality of scan lines in a first field of a frame for display and scanning successively the scan lines in a second field of the frame for display in an order reverse to that in the first field (see page 4, paragraphs 27-28, of computer translation). It can be seen in figure 4 that the first field (left half) scans lines S1-Sn successively and in the second field (right half) scans in a reverse direction from lines Sn-S1.

Mihara fails to specifically teach simultaneously resetting the scan lines in the first field after the scan lines are successively scanned in the first and second field.

Okada teaches a method for driving a liquid crystal display device whereby the states written in the preceding field, or frame, are erased into "white" state (see column 6, lines 24-30). With further reference to an alternate embodiment it is taught that the erasure step (C1) is simultaneously applied to the scanning lines (see column 5, lines 59-63)

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to allow the erasure step, as taught by Okada, in a driving method similar to that which is taught by Mihara, in order to reduce flickers in the display device.

Further, it would have been obvious to include the simultaneous reset of Okada to the display of Mihara to reduce the amount of scan time required. For example, if the reset period is T1 in Mihara, the total time is $T1 \times \text{Number of scan lines}$. By providing simultaneous reset as taught by Okada the amount of time to display a frame (frame

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with two sub-frame) is reduced by $2 \times [(T1 \times \text{No. of scan lines}) - T1]$, which is a significant reduction in time to display an image frame.

Further, as to simultaneously resetting the scan lines after the scan lines are displayed, it would have been obvious to one skilled in the art to simply move the reset period from the start of the sub-frame as shown in fig. 6 of Okada to the end of the sub-frame (for example move the reset period C1 to the end of the display period C2). This would have been obvious when Okada is combined with Mihara as shown in fig. 4 of Mihara because the scan lines are rescanned in the reverse direction and would therefore need to be reset before the display system scans from the bottom row to the top row (i.e., in fig. 4 of Mihara, after row S_n is scanned, the simultaneous reset would occur for all scan lines so the pixels are ready for information to be written during the second sub-frame, i.e., from S_n to S_1 (reverse order).

With reference to **claim 2**, Mihara teaches that the scanning direction is reversed for every field in interlaced scanning (see page 5, paragraph 33-page 6, paragraph 34, of computer translation).. It can be seen in Figure 6, that the first field (first section) scans lines S_1 - S_n successively and in the second field (second section) scans in a reverse direction from lines S_n - S_1 .

With reference to **claim 3**, Mihara specifically teaches that two write periods are provided for each scan line, wherein there are two writes for each scan line since there

is a write in the first field when scanned from top to bottom, and a write in the second field when scanned from bottom to top for each scan line contained in a single frame.

As to **claim 4**, it is clear from the modification discussed above with respect to **claim 1**, wherein the simultaneous reset set at the end of each field or sub-frame would result in each scan line being reset twice. For example, Mihara in Fig. 4 shows a first field or sub-frame being scanned from top S1 to bottom Sn which would be followed by a simultaneous reset as described above. The simultaneous reset allows for the scan lines to be written to once more. The second field or second sub-frame is ready to be written to and is scanned from bottom Sn to top S1 and is again followed by a simultaneous reset to allow for the next frame to be scanned. Therefore, the modification of made to Mihara by Okada would provide two reset periods (**claim 4**) as well as two write periods (**claim 3**) for each scan line.

With reference to **claim 8/1, 8/2, 8/3/2/1. 8/4/3/2/1**, Mihara teaches that the driving method is applicable to drive liquid crystal and it would be obvious to include an apparatus for carrying out the driving of the liquid crystal.

4. **Claims 7 and 9/7/1** are rejected under 35 U.S. C. 103(a) as being unpatentable over Mihara in view of Okada as applied to **claim 1** above, further in view of Surguy (U.S. Patent No. 5,233,338).

With reference to **claim 7**, Mihara and Okada teach all that is required as explained above with reference to claim 1, however fail to teach that the display device successively displays data corresponding to three colors.

Surguy teaches a color sequential liquid crystal display wherein pixel elements are addressed to produce red, green and blue outputs in a display period (see column 4, lines 20-26).

Therefore it would have been obvious to combine the color outputs, as taught by Surguy, in a device similar to that, which is taught by Mihara and Okada in order to provide less flickers in a full color display device.

With reference to **claim 9/7/1**, Mihara teaches that the driving method is applicable to a drive liquid crystal display device (see abstract).

5. **Claims 10, 11, 12/10, 12/11**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (U.S. Patent No. 6,172,662)

With respect to **claims 10 and 11**, Ito et al. teaches a liquid crystal display apparatus, wherein a polarity inversion drive method as explained comprises a frame period (F), which is divided into a plurality of selection periods (t11-t41) within one frame, defining the field. The selection periods (t11-t41) are further divided into two periods ((s1, s2), (s3, s4)), defining a plurality of writes within one field in the scan line

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(x1). With reference to Figures 4 and 5, it can be seen that data is written a plurality of times (s1, s2) in the first field (t11) by the use of a predetermined signal voltage (V1).

Even though Ito et al. teaches in the embodiment described in Figures 4 and 5, data is written a plurality of times (s3, s4) in the second field (t21) by usage of a predetermined voltage with the same polarity as that in the first field (t11), it is also further taught that the reversal period is not limited to one frame and it is possible to reverse the polarity for one field at a time, several fields, or several frames at a time (see column 12, lines 60-68). This is also explained with reference to the eighth embodiment explained with reference to Figure 9 (see column 15, lines 51-54). In view of the teachings disclosing that it is possible to reverse the polarity for one field at a time, it would be possible for one frame (F) containing a plurality of fields (t11-t41) to have a reversal of polarity every field, which reads on the limitations of **claim 11**, wherein data is written a plurality of times by use of a signal voltage having a polarity which becomes alternately positive and negative a plurality of times during the one frame (F).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to allow for the polarity of the signals applied to the scanning lines to be reversed each field within the frame as suggested by Ito et al. as explained above in order to prevent uneven display caused by non-uniformity of liquid crystal cells and in order to extend the longevity of the liquid crystal panel.

With reference to **claims 12/10 and 12/11**, Ito et al. teaches that the scan lines are divided in to blocks (G1, G2), wherein the scan lines of the plurality of groups are scanned simultaneously (see Figure 4).

6. **Claims 13/12/10, 13/92/11, 15/13/12/10, and 15/13/12/11** are rejected under 35 U.S.C.103(a) as being unpatentable over Ito et al. as applied to **claims 12/10 and 12/11** above, and further in view of Surguy (U.S. Patent No. 5,233,338).

With reference to **claims 13/12/10 and 13/12/11**, Ito et al. fail to teach that the frame is divided into three fields corresponding to three colors and data is successively displayed within each field.

Surguy teaches that a frame period (Tf) is divided into three subfields (ti), each subfield for one of the three primary colors, red, green, and blue (see column 4, lines 20-23).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to allow for the frames to be divided in to groups corresponding to three colors, as taught by Surguy, in a display device similar to that which is taught by Ito et al. in order to provide a display with high quality color and a reduction of flickers thereby reducing unevenness and increasing the quality of the display.

With reference to **claims 15/13/12/10 and 15/13/12/11**, Inaba et al., Takabatake et al., and Surguy teaches a field-sequential liquid crystal color display apparatus in

which data corresponding to three colors are successively displayed according to the driving method for a liquid crystal display as explained above (see column 5, lines 30-35).

Allowable Subject Matter

7. **Claims 5, 6, 8/5/3/2/1, and 9/6/5/3/2/1** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. **Claims 16-19** are allowed.

Response to Arguments

9. Applicant's arguments filed 6/16/04 have been fully considered but they are not persuasive. The applicant argues that the combination of Mihara and Okada fail to teach the limitations of **claim 1**. However as stated above the teachings of Mihara and Okada teach the limitations of the claims. As to the combination of the two reference and the application of the simultaneous reset of the scan lines after the scan lines are scanned in the first and second field, Okada teaches that the scan lines are reset before the scan lines are scanned. Which thereby provides a reset period after the lines are scanned, these lines being the lines from the previous scan line. Thereby the reset period of Okada would be at the end of the sub-frame as opposed to the beginning of the sub-frame. Furthermore newly cited references Tsuboyama et al. and Channin teach a reset signal following the scan line signal. Therefore for the reasons stated

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above in the rejection it is believe that the combination of Mihara and Okada does teach the claimed limitations. With reference to the applicant's arguments towards **claim 10**, it is stated that Ito fails to teach the newly cited limitations of the claims. However, as explained above, Iota teaches a first and second data signal having a period corresponding to the frame wherein the data signal has a first signal voltage during the first field and the second signal voltage during the second field and the first signal voltage is opposite to the polarity of the second signal voltage. Further with reference to **claim 11**, Ito teaches the plurality of write as explained above and data is written when each time the polarity is positive and negative. Therefore it is believed that Iota teaches the claimed limitations of claims 10 and 11.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alecia D. Nelson whose telephone number is (703) 305-0143. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras can be reached on (703) 305-9720. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

adn/ADN
November 23, 2004

AMR A. AWAD
PRIMARY EXAMINER

